Human Factors QMB
CRM Initiative

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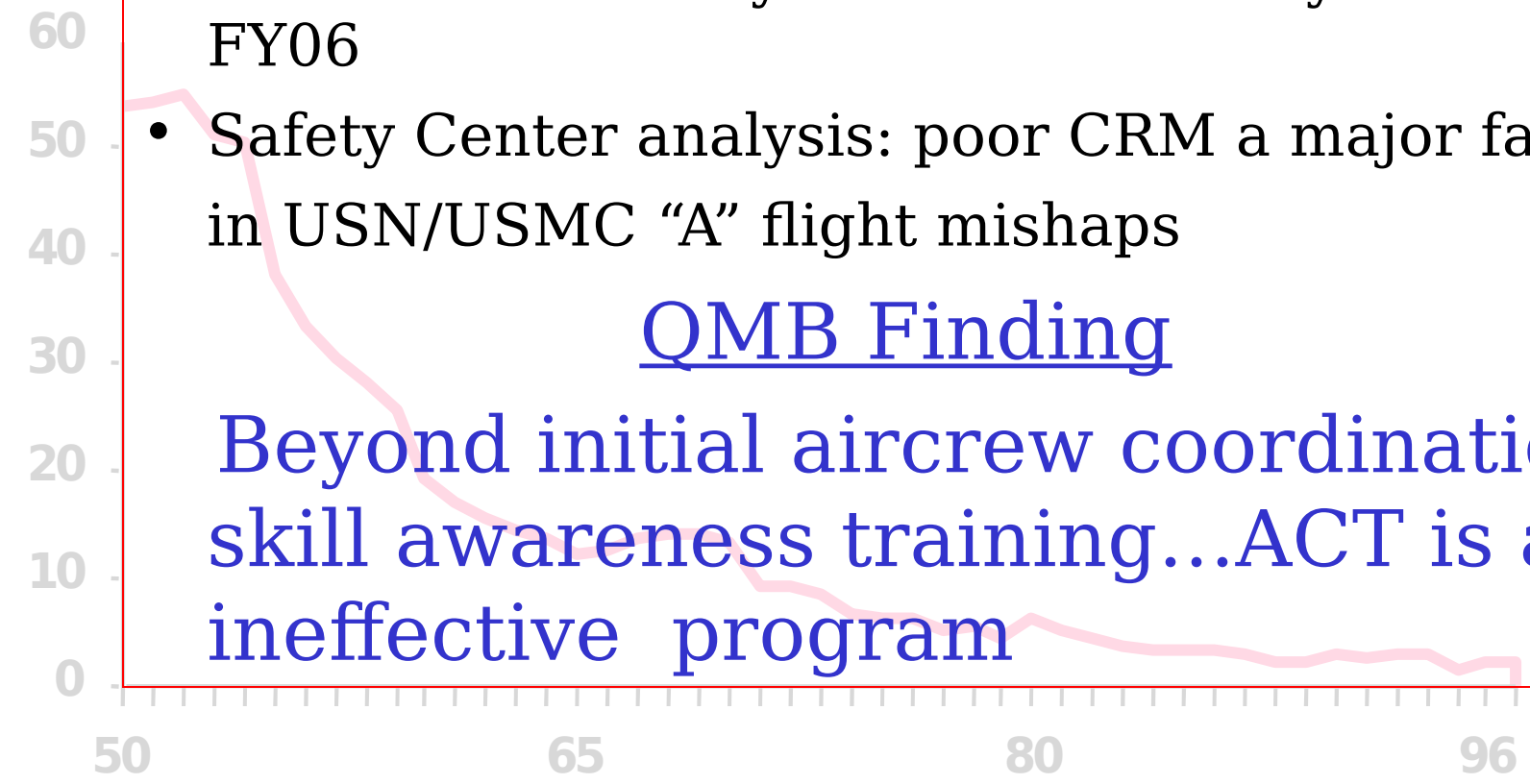
CRM Working Group Chair

Air Board Charter

- Reduce human error flight mishap rate 50% by end of FY00 and by additional 50% by end of FY06
- Safety Center analysis: poor CRM a major factor in USN/USMC “A” flight mishaps



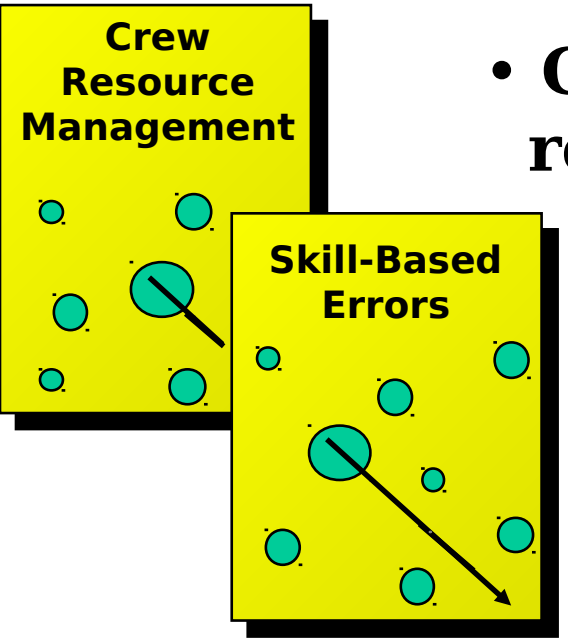
QMB Finding

Beyond initial aircrew coordination skill awareness training…ACT is an ineffective program

Human Factors

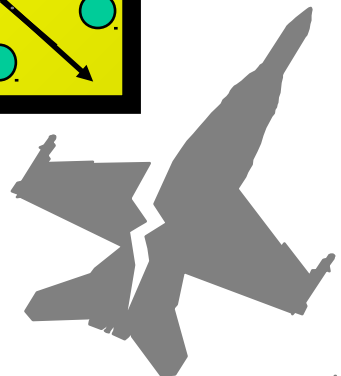
Safety Center, Feb 1999:

"...Skill-Based Errors (SBE) emerge unchecked thr
decade in an ever-larger percentage of our mishap



- **CRM failures present in 60% of all SBE related Class A mishaps (*FY90-98)***

- **CRM failures present in 52% of TACAIR mishaps & 84% of Helo mishaps**



Unsafe Acts

Errors

Decision - Skill-based - Perceptual Exceptional

Violations

Routine -

The Challenge…

Define the underlying/systemic problems

The Approach…

Collect data as much--or more--from training events as from “after-the-fact” mishap data

IDENTIFY AND ADDRESS HUMAN FACTORS ISSUES

Current ACT Program Leaves too much in the Classroom

- **Time critical ORM required in the cockpit**
  - **Not accomplished by an Instruction alone**
  - **No dynamic transfer of knowledge/skills**
- **Crew failure leads to unsafe acts**

Data (90-96)

Decision error (63%) **Skill-based (56%)**

CRM (52%) **Infractions (23%)**

OPTIMIZE DECISION MAKING UNDER PRESSURE

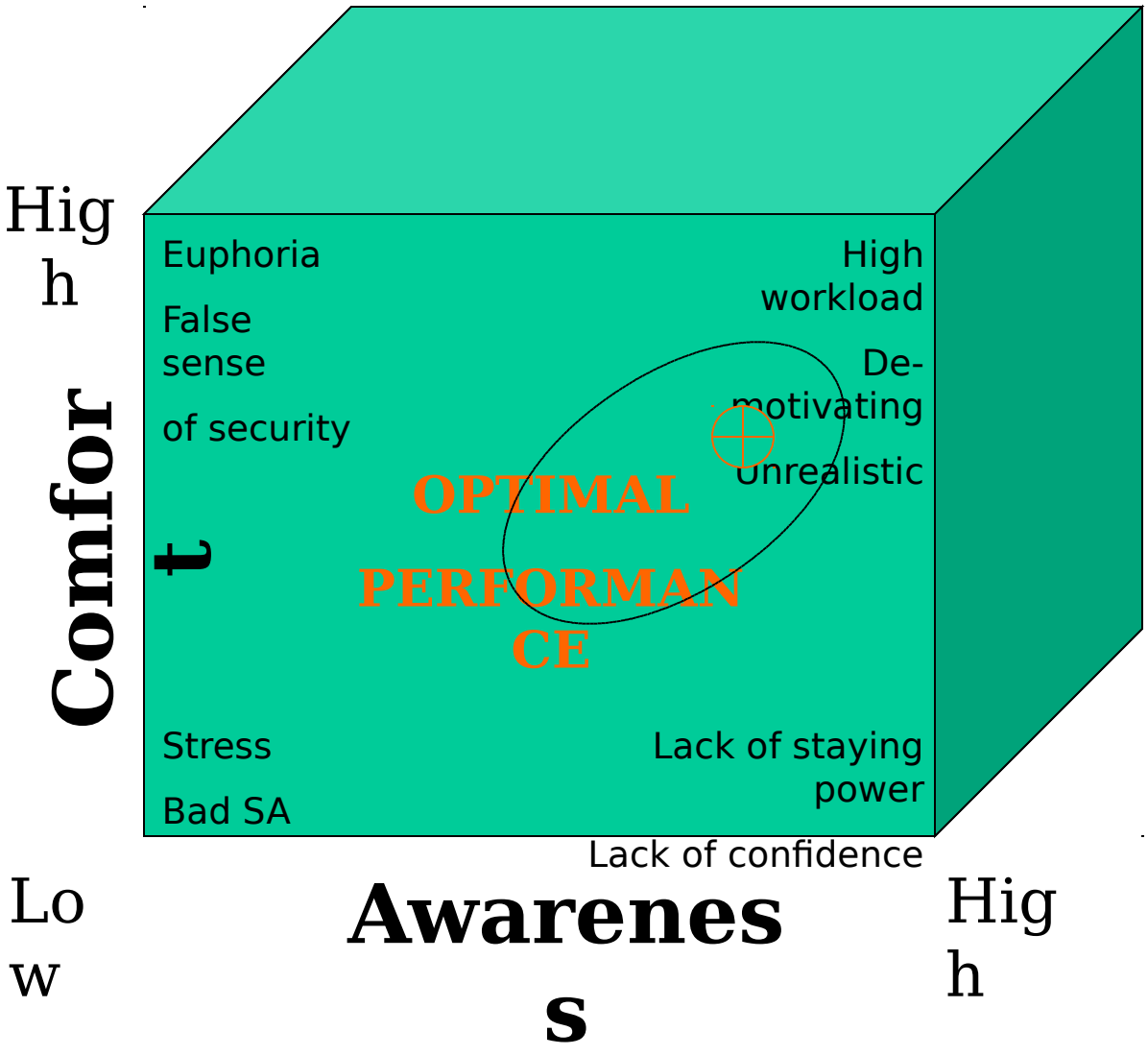
Goal of Steady State Program

Training focused on causal factor, training data and feedback to drive aircrews to:

- **Operate within crew/aircraft capabilities**
- **Identify when they are approaching the edge**
- **Identify when they are outside the box - give them skills to operate there and get back inside the box**

PUTS ORM IN THE COCKPIT

“The BOX”


High
Comfort
Low
Euphoria
False sense of security
High workload
De-motivating
Unrealistic
OPTIMAL PERFORMANCE
Stress
Bad SA
Lack of staying power
Lack of confidence
Awareness
High

VS-41 Beta Test

The Concept…

Pulse and measure cockpit ORM/CRM

The Method…

Dynamic simulator training and assessment

- **Use relevant squadron/community issues**
- **Integrate CRM into NATOPS core competencies**
- **Test crews' ability to manage uncertainty/SA**
- **Facilitate/mentor CRM as an interactive and dynamic process in the cockpit**

PROVIDES CLEAR DIRECTION FOR ACT


Operational Risk Management
MISSION PLANNING & EXECUTION
NATOPS
CRM/ACT
EP's
IP's/SOP's

QMB Working Group Focus

- **Improve human factors training, assessment and feedback**
  - **Develop trigger-based scenario to pulse targeted behaviors**
  - **Develop mission-specific performance collection instruments and feedback**
  - **ID best practices and failures**
  - **Trend analysis to target overall training direction (HFACS)**

LINK MISSION SOP's, NATOPS, IP's, EP's & ORM/CRM

Clear Direction for ORM/CRM

- **Integrate ORM and Crew Resource Management within core competencies**
  - **Increase versatility in thinking**
  - **Plan,practice, and debrief operational decision making/SA involving:**
    - **Non-routine/critical challenges**
    - **Ill-structured problems**
    - **Shifting,ill-defined or competing goals**
    - **Time stress**
    - **High stakes**
    - **Multiple players**

CAPTURE, REINFORCE, EXTEND THINKING SKILLS

What We Learned

INEFFECTIVE

- Management by Instruction
- Under funded
- Train-the-trainer (1-2 instructors per squadron)
- "Check in the box"

lectures/trainer

KEYS TO SUCCESS

- Leadership engagement and sup
- All instructors trained
  - Targeted scenario design/ass
  - Decision-making/SA coachin
  - Team self-analysis facilitatio
- Crew practice/data collection
  - T/M/S mission-specific
  - Critical path/curriculum asse

Multi-Dimensional

IES A PRACTICE…NOT A PROGRAM

Conclusions

- **ACT program as currently structured is ineffective**
  - **Single dimension**
  - **Program not integrated into training continuum**
  - **Transfer of skills not occurring**
- **Human factors influence needs to be adequately addressed**
  - **Instructor/facilitator training**
  - **Technology for data gathering/assessment**
  - **Emphasis on critical thinking skills**

The Roadmap

- **Develop training and human factors expertise to capture, identify and target meaningful training requirements**
- **Plan/practice/debrief operational decision making/SA**
    - **Use event-based scenarios**
    - **Capture, reinforce, extend thinking skills**
    - **Develop assessment/evaluation criteria (gold/lead standards)**
    - **Collect/analyze aircraft and crew performance data (individual, squadron, community)**

A SKILLS BASED MODEL

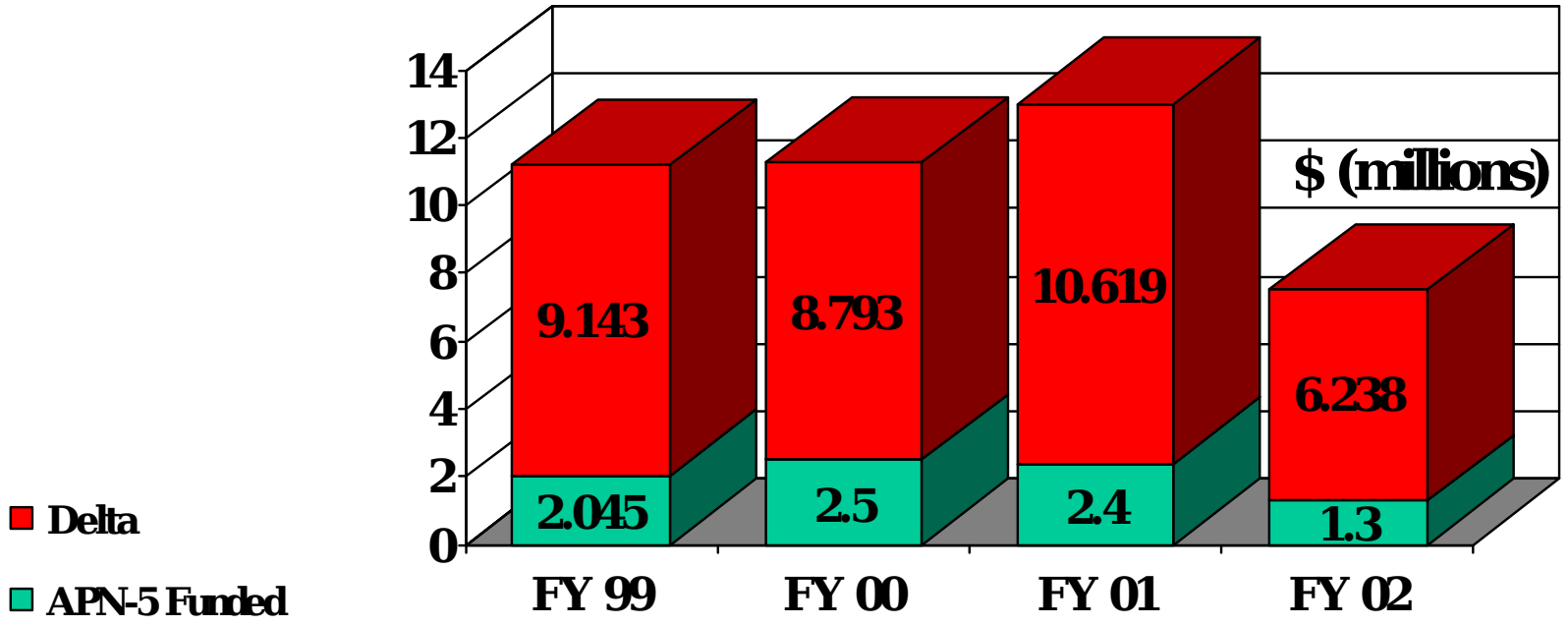
CRM Training Implementation Cost Estimates

- Expand Instructor training
- Improve curriculum development & support
- Research & product development
- Data collection/analysis & debrief technology

TOTAL : $48.3M

- Program implementation support

  TYCOM/MAW/RESFOR/CNET(MPN $5.3M)



Recommendations

- **Establish an ACT ESC to reevaluate ACT program**
  - **Strategic focus using HFQMB lessons learned and approach to moving ORM/CRM into the cockpit**
  - **Establish/define link to ACTC**
- **Fully resource the ACT Program**
  - **Four year integration plan**
  - **Becomes part of training continuum**